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Effect of source and level of sulphur on production of soybean (*Glycine max*)

K. RAMAMOORTHY[1], M. RAMASAMY AND K. VAIRAVAN

National Pulses Research Centre, Tamil Nadu Agricultural University, Vamban 622 303

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As information is meagre on the effect of sulphur nutrition on growth and yield of soybean [*Glycine max* (L.) Merr.], a field experiment was conducted during 1990 and 1991 to study the effect of different sources and levels of sulphur on production. The soil was clay loam containing low available nitrogen (185 kg/ha) and phosphorus (12.5 kg/ha) and medium available potassium (250 kg/ha), with pH 7.9. A randomized block design was followed with 9 treatments (Table 1), replicated thrice. Soybean 'CO 1' was used. A fertilizer dose of N, P and K @ 20, 80 and 40 kg/ha respectively was applied basal to all the plots. The crop was sown on 21 November 1990 and 5 November 1991 during winter season of 1990 and 1991, and harvested on 17 February 1991 and 2 February 1992 respectively. Sulphur was applied basal at the time of sowing as per the treatment schedule. All other improved agronomic management practices were followed as per the recommendation.

Increased grain yield of soybean (Table 1) was obtained with corresponding increasing levels of sulhur. The highest yield was obtained with the application of 40 kg S/ha which was significantly superior to the control. Among the sources, S applied in the form of gypsum ($CaSO_4$) was found superior

Table 1. Effect of different sources and levels of sulphur on grain yield and economics of soybean

Treatment	Grain yield (kg/ha)			Economics	
	1990	1991	Mean	Net return (Rs/ha)	Benefit : cost ratio
Control (NPK alone)	790	1,280	1,035	3,988	2.45
10 kg S as gypsum	844	1,488	1,166	4,834	2.75
20 kg S gypsum	880	1,548	1,214	5,136	2.86
30 kg S gypsum	972	1,697	1,335	5,102	3.13
40 kg S gypsum	1,071	1,994	1,533	7,189	3.60
10 kg S as pyrite	849	1,429	1,139	4,654	2.69
20 kg S as pyrite	916	1,399	1,158	4,767	2.72
30 kg S as pyrite	975	1,578	1,277	5,520	2.98
40 kg S as pyrite	1,053	1,786	1,420	6,435	3.30
CD (P = 0.05)	117.0	189.3			

Cost (Rs/kg) : Soybean grain, 6.50

Present address: [1] Agricultural Research Station, TNAU, Bhavanisagar 638 451

to S applied in the form of pyrite. Sharma and Bradford (1973) and Bansal *et al.* (1983) reported increae in the yield of soybean by sulphur fertilization.

The highest net return was obtained with 40 kg S/ha in the form of gypsum. This was followed by 40 kg S/ha applied as pyrite. The return per rupee invested was also more under the above treatments.

It is evident that the application of sulphur in the form of gypsum or pyrite @ 40 kg/ha gave increased grain yield of soybean and net return over lower doses and the control. These results confirm the findings of Tandon (1984).

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Effect of crop-production inputs on gram (*Cicer arietinum*) in north–eastern hills zone of Madhya Pradesh

V. K. SINGH AND R. P. BAJPAI

Zonal Agricultural Research Station, Indira Gandhi Krishi Vishwa Vidyalaya, Ambikapur, Madhya Pradesh 497 001

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A field experiment was laid out to study relative contribution of different production inputs on yield of gram (*Cicer arietinum* L.) at Ambikapur, during the winter season (*rabi*) of 1987–88 and 1988–89. The soil of the experimental plot was sandy loam having pH 6.1. It was low in available nitrogen and phosphorus and medium in potassium. Treatments comprised full package (improved variety 'JG 74'; line sowing at 25 cm apart; 20, 60 and 30 kg N, P and K/ha; seed inoculation with rhizobium culture; seed treatment with bavistin @ 3 g/kg seed and 1 spraying of monocrotophos 40 EC @ 750 ml/ha; 2 irrigations at 45 and 65 days after sowing and 2 hand-weedings at 25 and 50 days after sowing), and by substracting each input (improved variety, line sowing, fertilizer, seed inoculation, irrigation, weed control and plant protection) one by one from the full package.

These treatments were also compared with absolute control. Gram was sown on 1 December 1987 and 21 November 1988 and